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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/085,548
Filing Date: February 27, 2002
Appellant(s): UNNO, TAKAHIRO

Carlton H. Hoel
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 04/06/2006 appealing from the Office action

mailed 10/04/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under

appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Double Patenting

Claim 1 is rejected under the judicially created doctrine of obviousness-type

double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,826,527.

Although the conflicting claims are not identical, they are not patentably distinct from

each other because by dropping the periodicity classification of claim 1 within the

application and then subbing in the well known standard muting for error concealment of

claim 1 of Patent 6,826,527, the claims would then read the same.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,2, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoham (5,699,485), in view of Husain et al. (Classification and Spectral Extrapolation Based Packet Reconstruction for Low-Delay Speech Coding).

As to claim 1, Shoham teaches:

(a) forming an excitation for an erased interval of encoded code-excited linear prediction signals by a weighted sum of (i) an adaptive codebook contribution and (ii) a fixed codebook contribution (an excitation signal synthesis during frame erasure, with a decoder including both an adaptive codebook portion and a fixed codebook portion (col. 4, lines 49-55), where the output of each is supplied to a summer (col. 4, lines 64-65, and col. 5, lines 40-41), where the summer generates an excitation signal, (col. 5, lines 49-51)), wherein said adaptive codebook contribution derives from an excitation and pitch and first gain of one or more intervals prior to said erased interval, (the erased frame is based on the previous frame, where the adaptive codebook contribution is the pitch and gain is also based on the previous sample, col. 6, lines 33-35, and 44-46), and said fixed codebook contribution derives from a second gain of at least one of said prior intervals, (the fixed codebook gain is synthesized based on previous frames, col. 7, liens 23-27);

(b) wherein said weighted sum has sets of weights depending upon a periodicity classification of at least one prior interval of encoded signals, (an indication of periodicity for the erased frame is obtained from the previous frame, (col.6 lines 7-10),

where the classification leads to a different summation for each classification, col. 6, line 15, through col. 7, line 34);

(c) filter said excitation (filter the excitation through a synthesis filter, col. 11, lines 27-28).

Shoham does not teach the periodicity classification with at least three classes. However, Husain et al. teach four classifications, page 848, col. 2.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the process of forming the excitation for an erased interval of Shoham with the three or more speech classifications of Husain et al. to lower the degradation of a signal with missing packets, as taught by Husain et al. (page 848, col. 1).

As to claim 2, Shoham teaches said filter includes a synthesis with synthesis filter coefficients derived from filter coefficients of said intervals prior in time, (upon the occurrence of a frame erasure, the coefficients stored in memory are supplied to the synthesis filter, col. 7, lines 45-47).

As to claim 5, Shoham teaches:

(a) a fixed codebook vector decoder, (col. 4, lines 49-51);

(b) a fixed codebook gain decoder, (col. 4, lines 56-60);

(c) an adaptive codebook gain decoder, (col. 4, lines 52-53);

(d) an adaptive codebook pitch delay decoder (col. 4, lines 51-53);

(e) an excitation generator coupled to said decoders, (col. 5, line 49); and

(f) a synthesis filter, (col. 5, line 55);

(g) wherein when a received frame is erased, said decoders generate substitute outputs (the fixed codebook and adaptive codebook send signals to summer, col. 5, lines 55-56), said excitation generator generates a substitute excitation, (generate an excitation signal, col. 5, line 55), said synthesis filter generates substitute filter coefficients, (the coefficients stored in memory are supplied to the synthesis filter, col. 7, lines 45-47), and said excitation generator uses a weighted sum of (i) an adaptive codebook contribution and (ii) a fixed codebook contribution with said weighted sum uses sets of weights depending upon a periodicity classification of at least one prior frame, (a summer combines the outputs from each of the codebook decoders, having coefficients, generating an excitation signal, where the generation of the excitation signal is based on the classification of the previous frame, (col. 5, lines 49-54, and col. 6, lines 7-10). The weights applied to the coefficients are representative of the periodicity classification of the previous frame, (col. 6, lines 12-14, 15-17, and 52-55)).

Shoham does not teach the periodicity classification with at least three classes.

However, Husain et al. teach four classifications, page 848, col. 2.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the process of forming the excitation for an erased interval of Shoham with the three or more speech classifications of Husain et al. to lower the degradation of a signal with missing packets, as taught by Husain et al. (page 848, col. 1).

(10) Response to Argument

Applicant's arguments filed 04/06/2006 have been fully considered but they are

not persuasive.

In response to applicant's argument that there is no suggestion to combine the

references (Appellant's Brief, page 3, lines 16-18), the examiner recognizes that

obviousness can only be established by combining or modifying the teachings of the

prior art to produce the claimed invention where there is some teaching, suggestion, or

motivation to do so found either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5

USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed.

Cir. 1992). In this case, Husain et al. (Classification and Spectral Extrapolation Based

Packet Reconstruction for Low-Delay Speech Coding) teaches recovery techniques

based on speech classification, where the recovery signal system extrapolates the

excitation signal based on speech classification, these classifications being (voiced,

unvoiced, transition and silence) (page 848, columns 1 and 2). Shoham (5,699,485)

teaches a system that concerns the operation of speech coding system experiencing

frame erasure. The decoder includes both an adaptive codebook portion and a fixed

codebook portion. Both the adaptive and fixed codebooks having a gain amplifier, used

in reconstructing the speech signal (col. 3, lines 29-31 and col. 4, lines 49-55), where

the generation of a substitute excitation signal during periods of frame erasure is

dependent on the classification of the frame (voice or unvoiced) (col. 6, lines 1-5). The combination is with the Shoham reconstruction system, with the classifications of Husain et al., where Husain et al. teach a motivation that using the three classes (voiced unvoiced and transition) will avoid adding artifacts to the reconstructed speech, creating a output speech with lower degradation (col. 1, page 849, lines 39-43).

In response to applicant's argument that Husain et al. actually has only two periodicity-type classes (Appellant's Brief page 3, lines 19-24), the examiner argues that Husain et al. teach three periodicity classes. These periodicity classes being voiced, unvoiced and transition (col. 2, page 848, lines 33-36). The applicant has argued that the transition class is not periodic; however, Hussain et al. clearly states the transition class includes speech onsets (col. 2, page 849, lines 12-14), where the speech onsets are periodic by nature.

In response to applicant's argument that Husain et al. is incompatible with Shoham and even if Husain et al. suggested three periodicity-type classes, there is no suggestion of an excitation for all three classes as linear combinations of adaptive and fixed codebook contributions as required by the claims (Appellant's Brief page 3, lines 12-13 and 25-30), the examiner argues that the Shoham reference is relied upon to teach an excitation for the classes as linear combinations of adaptive and fixed codebook contributions (see the above rejection to claim 1). However, Shoham only teaches using two different classes, voiced and unvoiced (col. 6, lines 1-5); therefore,

the Husain et al. reference was only relied upon to teach three or more periodicity

classifications not to teach an excitation for the classes as linear combinations of

adaptive and fixed codebook contributions. Examiner further argues that Shoham is

compatible with Husain et al. since both references teach the common aspect of

improving the performance of a speech decoder with frame erasure during

transmission, and the coding system of each being a Code Excited Linear Prediction

Coder (CELP), (see Shoham abstract and col. 3, lines 30-35, and Husain et al. abstract

and col. 1, page 848, lines 22-24). The motivation to combine the references is found in

Husain et al., where it is taught that using three classes (voiced unvoiced and transition)

will avoid adding artifacts to the reconstructed speech, creating a output speech with

lower degradation (col. 1, page 849, lines 39-43).

In response to the applicant's argument to the obviousness-type double

patenting rejection of claim, that dropping the periodicity classification of application

claim 1 and substituting in the muting of claim 1 of USP 6,826,527 would make the

claims identical (Appellant's Brief, page 4, lines 2-7) would not be obvious, the examiner

argues that the step of muting the excitation as found in claim 1, of USP 6,826,527

could be substituted for step (b) of the present application because, before the muting

step is carried out, the periodicity classification of the frame has to be found (USP

6,827,527, col. 2, lines 46-63). Based on the frame characteristics (including the

classification), the excitation-muting factor is updated (USP 6,827,527, col. 7, lines 13-

22), where the muting factor is used to mute the sum of an adaptive codebook

contribution and a fixed codebook contribution (USP 6,827,527, col. 8, lines 37-41).

Therefore, by merely substituting the muting step of claim one of USP 6,827,527, for

step (b) of the present application the claims would become identical.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the

Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Thomas Shortledge

Conferees:

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